From:	Kessler, Katrina (MPCA)
To:	Pierard, Kevin; Ramach, Sean
Cc:	Weiss, Steven (MPCA)
Subject:	follow up
Date:	Tuesday, October 14, 2014 1:30:53 PM
Attachments:	MPCA"s NPDES Nutrient Limits .pdf

Good afternoon Kevin and Sean:

As promised at the conclusion of the call this morning I have attached the slides we presented. I would caution anyone viewing them, in particular slide 7, that we are still fervently working to develop implementation guidance. The equations and overview presented Slide 7 comes from a **draft** process document that we have not yet had a chance to review with you guys. As long as HQ understands that nothing is final yet, we are happy to share our thinking with you and them. Steve should be back at work later this week or early next week and I expect at that time he will contact Sean to set up a time to go over the latest draft of our implementation in more detail. Many thanks again for your support on this effort and for facilitating the discussion this morning!

Katrina
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Water Assessment Section Manager
MPCA - St. Paul
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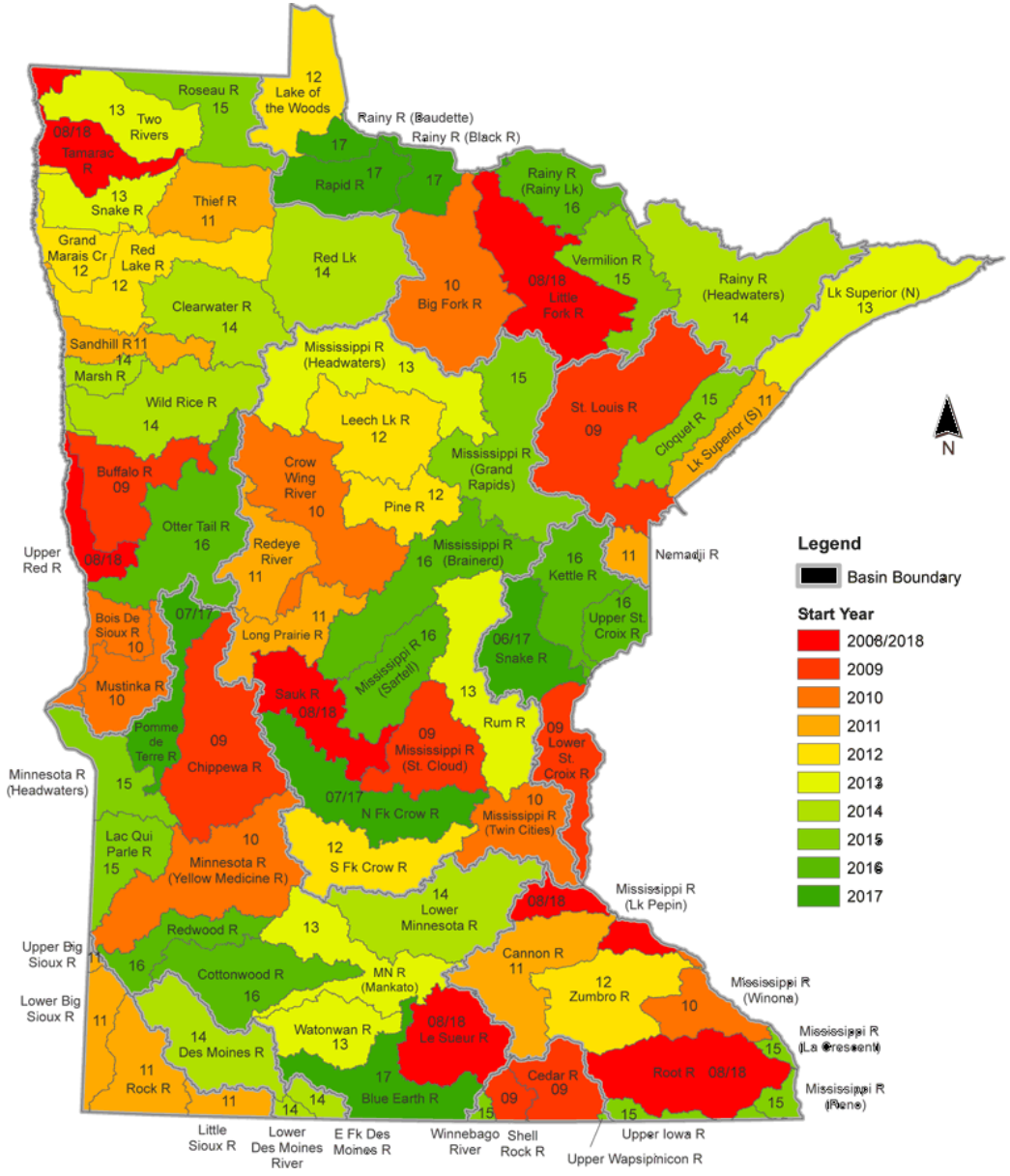
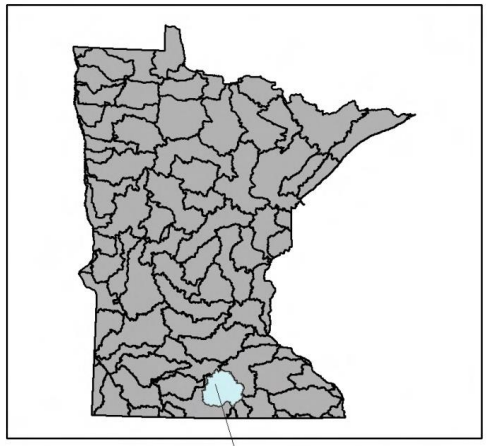
IMPLEMENTING RIVER EUTROPHICATION CRITERIA IN MN

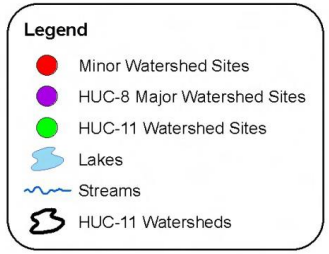
Katrina Kessler
Marco Graziani
Matt Lindon

Minnesota Pollution Control Agency

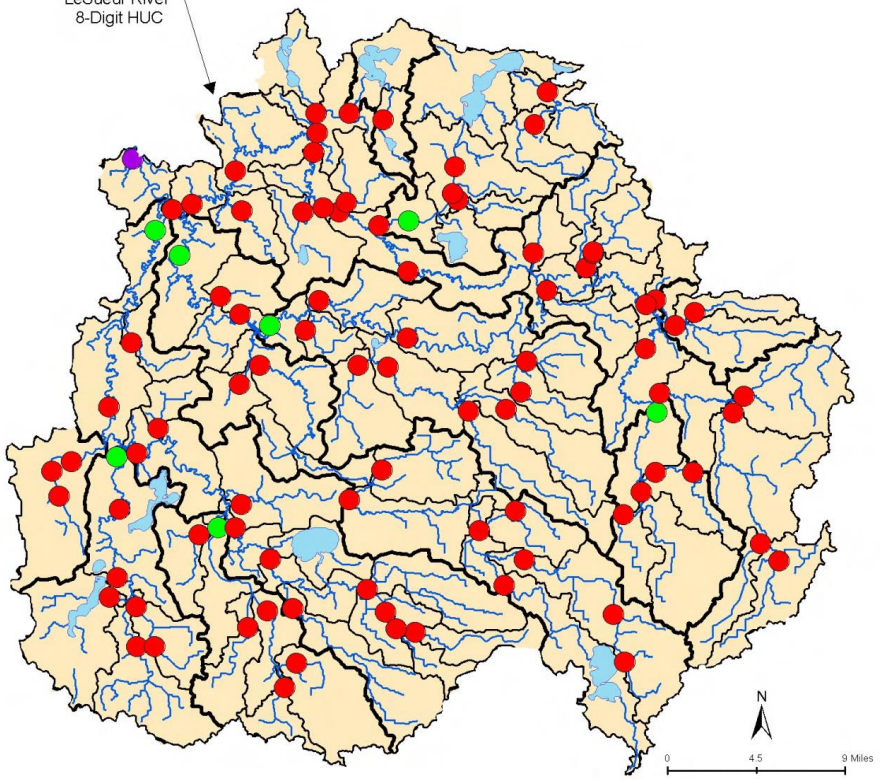
10 Yr. Watershed Monitoring Approach







LeSueur River
8-Digit HUC

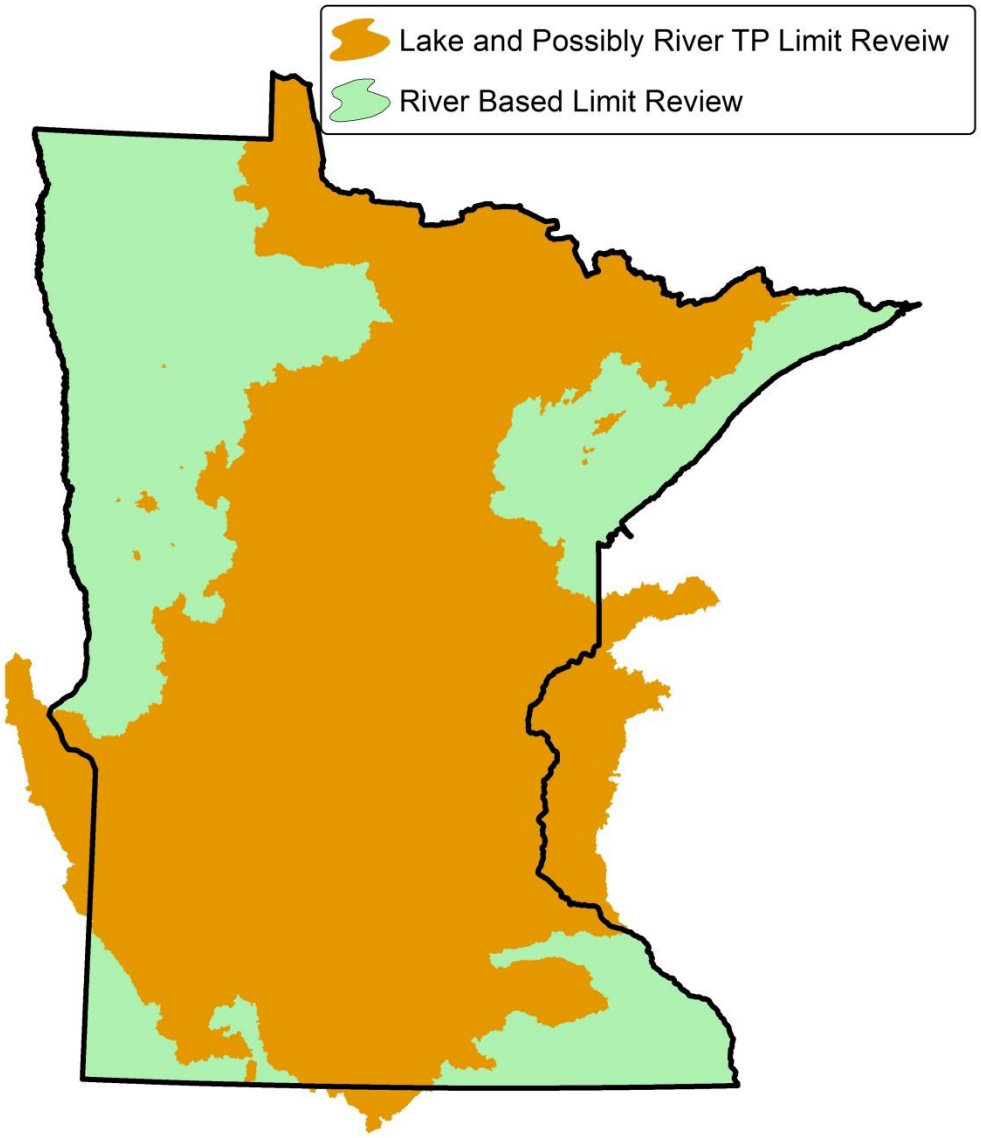


Monitoring in the Le Sueur Watershed

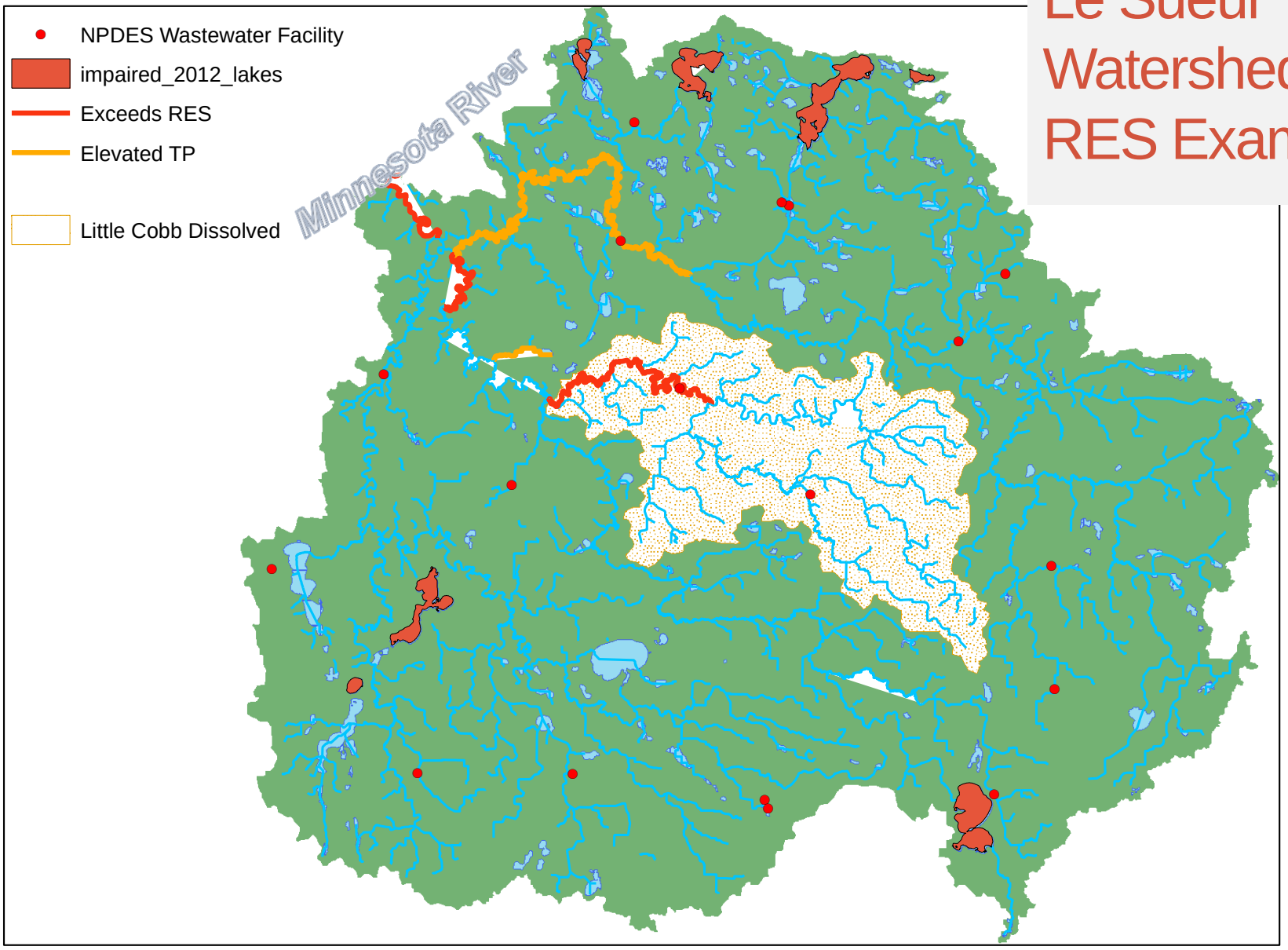
HUC 11sites
Chem. and Biological

Minor Sites
Biological

Phosphorus Limits in MN



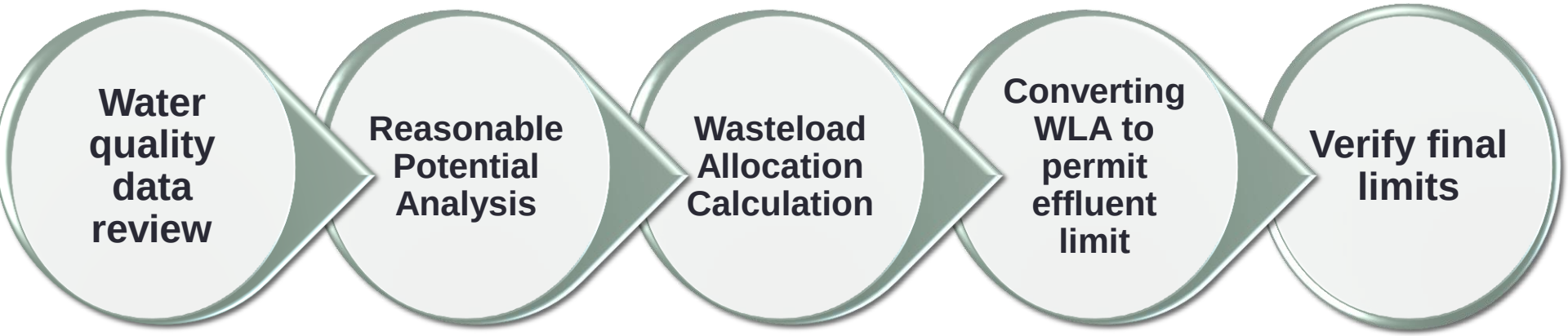
Le Sueur Watershed RES Example



Waldorf Example

Draft

Phosphorus Limit Process / Calculations



$$\mathbf{Cr} = \frac{\mathbf{QsCs + QeCe}}{\boldsymbol{Qs}} \qquad \frac{(\boldsymbol{RES} * (\boldsymbol{Qs} + \boldsymbol{Qe})) - (\boldsymbol{Qs} * \boldsymbol{Cs})}{\boldsymbol{Qe}} = \boldsymbol{WLA} \qquad \frac{\boldsymbol{WLA}}{\boldsymbol{Qea}} = \boldsymbol{Cem}$$

RES= River Eutrophication Standard

Cr= Concentration of river at critical flow with WWTF at 70% of AWWDF

Qs= Flow of stream without WWTF(s)

Cs= Concentration of river without WWTF(s)

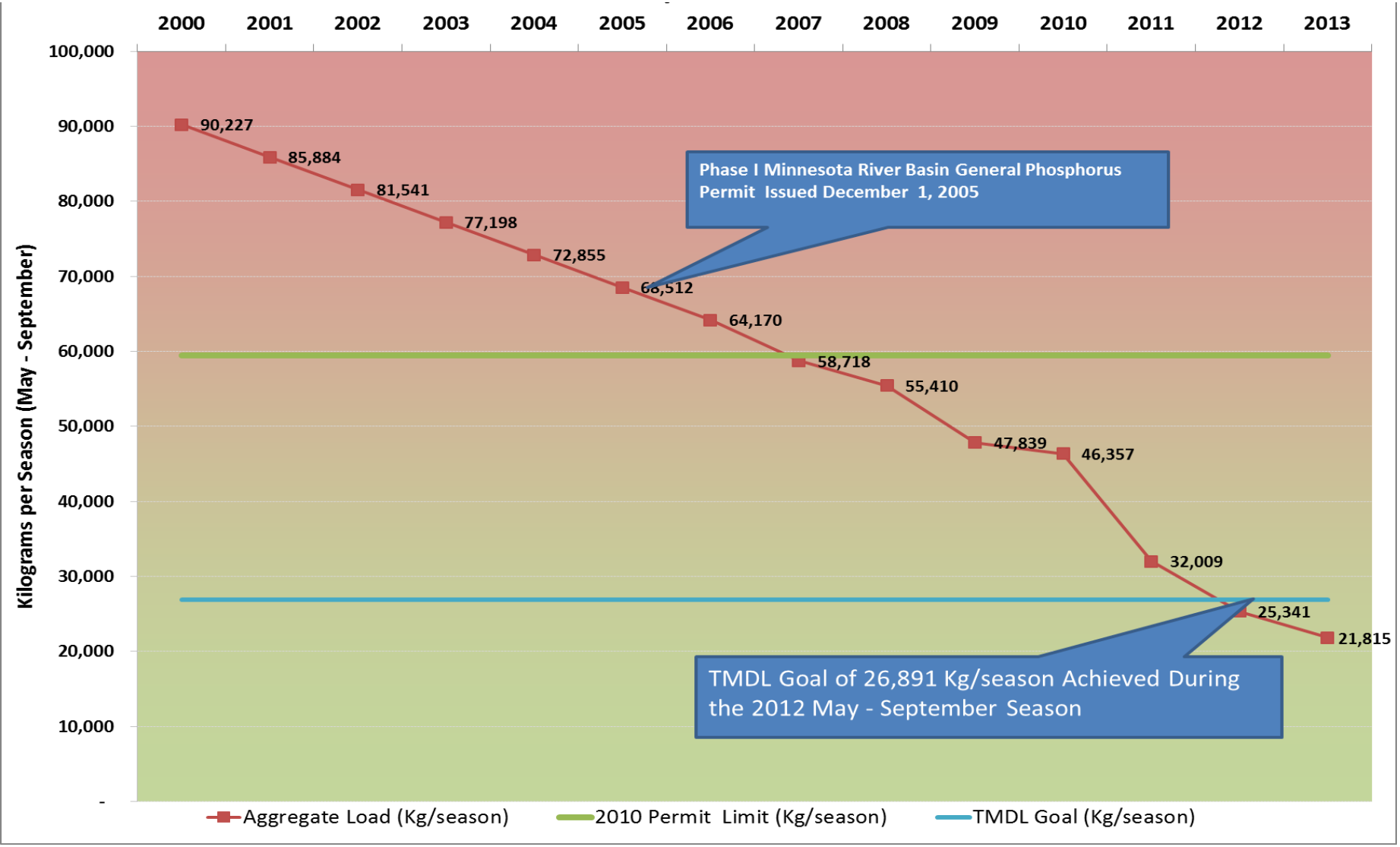
Qe= Design flow of WWTF

Ce= Long term effluent concentration, existing concentration limit or mass concentration target of mass limit

Qea is the current actual effluent flow

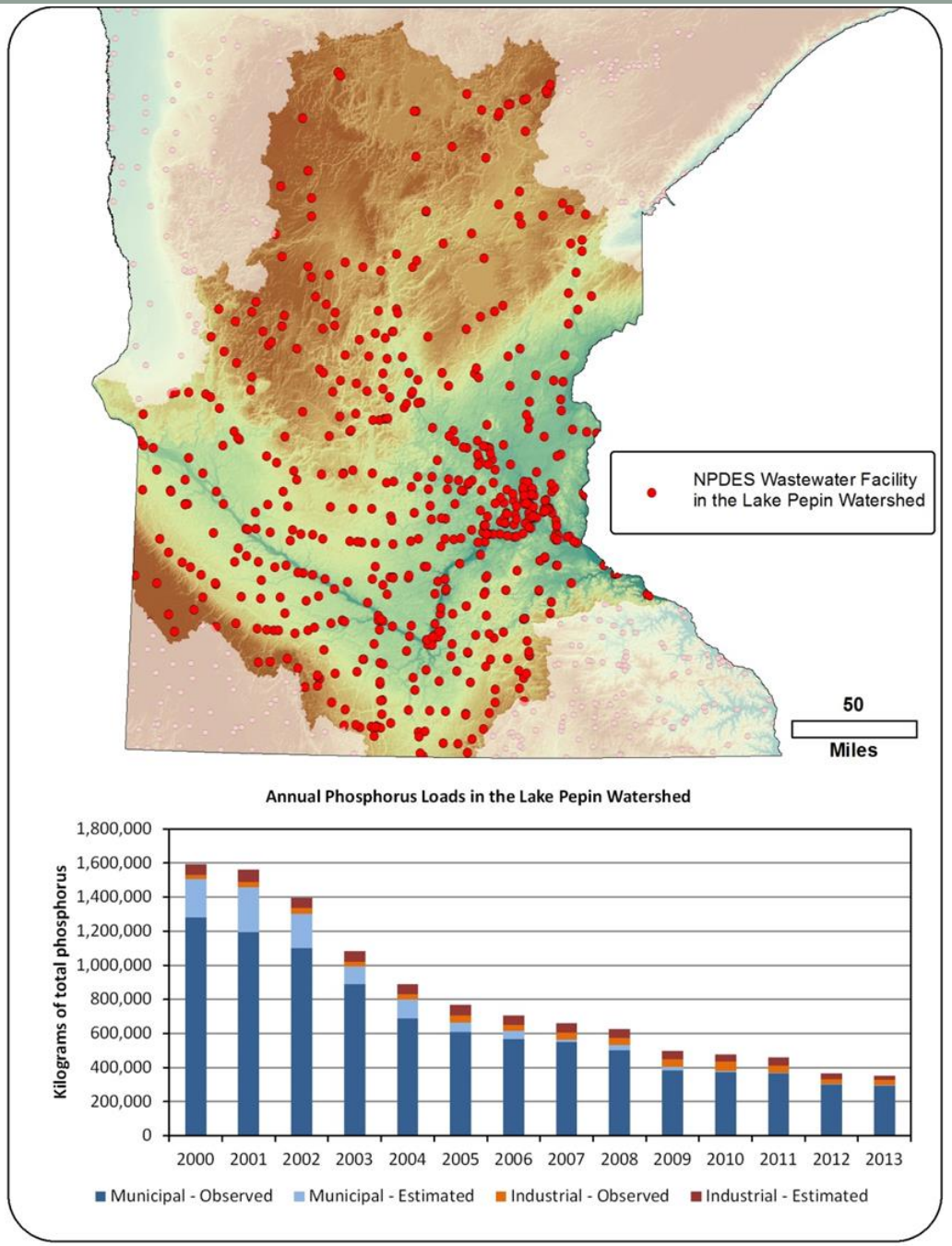
Cem maximum potential effluent concentration

Minnesota River Basin General Phosphorus Permit Reductions Required and Achieved



Summary of Survey Data

	1980 August 12-17	2006 August 31 – September 12	2012 August 3 - 24
DO (mg/L) lowest daily mean	4.2	5.3	5.1
Mean Temp °C on lowest DO day	23.4	22.4 --- (72F)	27.8 --- (82F!)
TP (ug/L) Range observed at most downstream station	140 – 200	145 – 202	85 – 110
Chl-a (ug/L) Range observed at most downstream station	44 – 98	38.7 – 81.5	26.1 – 50.2
Mean Flow (cfs) @ Jordan *on lowest DO day*	741	1,010	1220



WWTP phosphorus reductions upstream of Lake Pepin

Thank You

Questions